



# ***STIC Search Report***

**EIC 1700**

**STIC Database Tracking Number: 120400**

**TO: Ben Sackey**  
**Location: REMSEN 5B31**  
**Art Unit : 1626**  
**April 29, 2004**

**Case Serial Number: 10/088276**

**From: Kathleen Fuller**  
**Location: EIC 1700**  
**REMSSEN 4B28**  
**Phone: 571/272-2505**  
**Kathleen.Fuller@uspto.gov**

## **Search Notes**

Miss Fuller

Access DB# 120400

# SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: BEN SACKETT Examiner #: 73489 Date: 4/26/04  
 Art Unit: 1626 Phone Number 302-0704 Serial Number: 10/088,276  
 Mail Box and Bldg/Room Location: REM 5 B31 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*

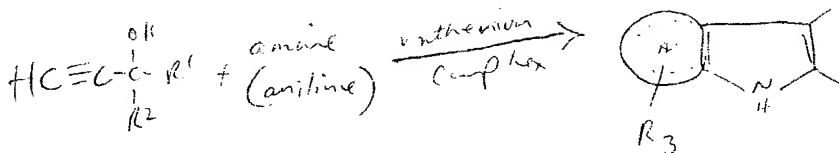
Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Process for preparing Fused Pyroles  
 Inventors (please provide full names): Makoto Tokunaga and Yaguo Wakatsuki

Earliest Priority Filing Date: 7/17/00

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Process for preparing Condensed Pyroles comprising:  
 reacting alkyne alcohol of formula (4) with an aromatic primary amine in the presence of ruthenium catalyst complex.



claim 11  
 catalyst is ruthenium salt

\*\*\*\*\*

## STAFF USE ONLY

Searcher: <u>X. Fuller</u>	Type of Search	Vendors and cost where applicable
Searcher Phone #: _____	NA Sequence (#) _____	STN <u>✓</u>
Searcher Location: _____	AA Sequence (#) _____	Dialog _____
Date Searcher Picked Up: _____	Structure (#) <u>4</u>	Questel/Orbit _____
Date Completed: <u>4/29/04</u>	Bibliographic _____	DrLink _____
Searcher Prep & Review Time: <u>30</u>	Litigation _____	Lexis/Nexis _____
Clerical Prep Time: _____	Fulltext _____	Sequence Systems _____
Online Time: <u>28</u>	Patent Family _____	WWW/Internet _____
	Other _____	Other (specify) _____

Capraet

=&gt; FILE CASRE

FILE 'CASREACT' ENTERED AT 14:00:40 ON 29 APR 2004  
 USE IS SUBJECT TO THE TERMS OF YOUR CUSTOMER AGREEMENT  
 COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)

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FILE CONTENT: 1840 - 25 Apr 2004 VOL 140 ISS 17

Some records from 1974 to 1991 are derived from the ZIC/VINITI data file and provided by InfoChem and some records are produced using some INPI data from the period prior to 1986.

This file contains CAS Registry Numbers for easy and accurate substance identification.

Crossover limits have been increased. See HELP RNCROSSOVER for details.

Structure search limits have been raised. See HELP SLIMIT for the new, higher limits.

=&gt; D QUE

L16

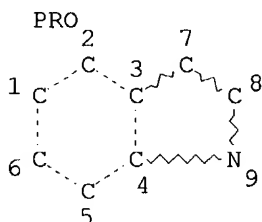
STR

RRT

CH≡C~C~OH  
 10 11 12 13

RRT 17

H  
 |  
 A~N~H  
 14 15 16

*Reactant / reagent*

## NODE ATTRIBUTES:

NSPEC IS RC AT 14  
 CONNECT IS E2 RC AT 9  
 DEFAULT MLEVEL IS ATOM  
 DEFAULT ECLEVEL IS LIMITED

## GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED  
 NUMBER OF NODES IS 17

STEREO ATTRIBUTES: NONE

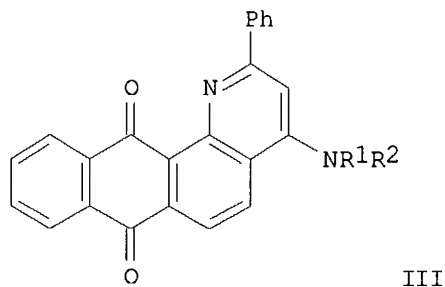
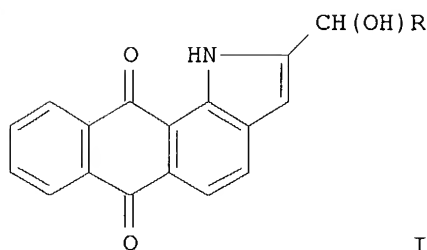
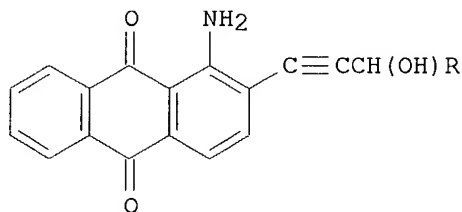
## \*\*\*\*MAPPINGS\*\*\*\*

NOD	SYM	ROL	NOD	SYM	ROL
9	N	PRO	15	N	RRT
15	N	RRT	9	N	PRO

L18      7 SEA FILE=CASREACT SSS FUL L16 (      50 REACTIONS)

=&gt; D L18 BIB ABS IND FCRD

L18 ANSWER 1 OF 7 CASREACT COPYRIGHT 2004 ACS on STN  
 AN 136:385917 CASREACT  
 TI Transformations of 1-amino-2-(3-hydroxyalk-1-ynyl)-9,10-anthraquinones in the presence of amines  
 AU Barabanov, I. I.; Fedenok, L. G.; Polyakov, N. E.; Shvartsberg, M. S.  
 CS Institute of Chemical Kinetics and Combustion, Siberian Branch of the Russian Academy of Sciences, Novosibirsk, 630090, Russia  
 SO Russian Chemical Bulletin (Translation of Izvestiya Akademii Nauk, Seriya Khimicheskaya) (2001), 50(9), 1663-1667  
 CODEN: RCBUEY; ISSN: 1066-5285  
 PB Kluwer Academic/Consultants Bureau  
 DT Journal  
 LA English  
 GI



AB When heated in piperidine, 1-amino-2-(3-hydroxyalk-1-ynyl)-9,10-anthraquinones (I; R = H, Pr) undergo cyclization to 2-(1-hydroxyalkyl)naphth[2,3-g]indole-6,11-diones (II). In contrast, I (R = Ph) reacts with primary and secondary amines to give 1-amino-2-(1-amino-2-benzoylvinyl)-9,10-anthraquinones, which undergo cyclization to naphtho[2,3-h]quinoline-7,12-diones (III; NR1R2 = piperidino, NHBu, NEt2). Heating I (R = Ph) with Et3N causes its dehydrogenation and isomerization.  
 CC 25-18 (Benzene, Its Derivatives, and Condensed Benzenoid Compounds)  
 ST anthraquinone amino hydroxyalkynyl cyclization; aminoanthraquinone aminobenzoylvinyl prepn cyclization; naphthindole-dione hydroxyalkyl prepn; naphthoquinolinedione amino prepn  
 IT Dehydrogenation  
 Isomerization  
 (of amino(hydroxyphenylpropynyl)anthraquinone)  
 IT Heterocyclization  
 (transformations of 1-amino-2-(3-hydroxyalk-1-ynyl)-9,10-anthraquinones in presence of amines)  
 IT Amines, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (transformations of 1-amino-2-(3-hydroxyalk-1-ynyl)-9,10-anthraquinones  
 in presence of amines)

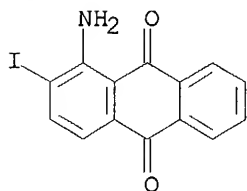
IT 768-03-6, Phenylvinyl ketone  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (reaction with aminoiodoanthraquinone)

IT 107-19-7, Propargyl alcohol 81050-51-3  
 RL: RCT (Reactant); RACT (Reactant or reagent)  
 (transformations of 1-amino-2-(3-hydroxyalk-1-ynyl)-9,10-anthraquinones  
 in presence of amines)

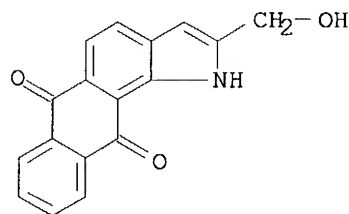
IT 130082-03-0P 143077-30-9P 180689-19-4P 335379-02-7P 426816-32-2P  
 426816-33-3P 426816-37-7P  
 RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
 (Reactant or reagent)  
 (transformations of 1-amino-2-(3-hydroxyalk-1-ynyl)-9,10-anthraquinones  
 in presence of amines)

IT 129995-13-7P 130082-01-8P 143077-32-1P 157439-79-7P 180689-26-3P  
 426816-34-4P 426816-35-5P 426816-36-6P 426816-38-8P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (transformations of 1-amino-2-(3-hydroxyalk-1-ynyl)-9,10-anthraquinones  
 in presence of amines)

RX(18) OF 34 - 2 STEPS



1. Propargyl alcohol,  
 PdCl<sub>2</sub>(PPh<sub>3</sub>)<sub>2</sub>, CuI,  
 Na<sub>2</sub>CO<sub>3</sub>, Pyridine,  
 Water  
 2. Piperidine



58%

RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

=> D L18 BIB ABS IND FCRD 2-7

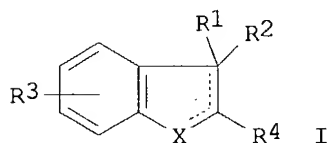
L18 ANSWER 2 OF 7 CASREACT COPYRIGHT 2004 ACS on STN  
 AN 136:118383 CASREACT  
 TI Processes for preparation of indole derivatives  
 IN Tokunaga, Makoto; Wakatsuki, Yasuo  
 PA Japan Science and Technology Corporation, Japan; Riken Corp.  
 SO PCT Int. Appl., 27 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA Japanese

*applicants*

KATHLEEN FULLER EIC 1700 REMSEN 4B28 571/272-2505

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002006226	A1	20020124	WO 2001-JP5691	20010702
	W: US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	JP 2002030069	A2	20020129	JP 2000-216457	20000717
	EP 1302459	A1	20030416	EP 2001-945742	20010702
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	US 2004049054	A1	20040311	US 2002-88276	20021022
PRAI	JP 2000-216457	20000717			
	WO 2001-JP5691	20010702			
OS	MARPAT 136:118383				
GI					



AB The invention provides processes for the preparation of fused pyrroles, preferably indoles, which permit the use of inexpensive aromatic amines themselves as the raw material and attain high atomic efficiency and high regioselectivity. Specifically, a process for the preparation of fused pyrroles, e.g., indoles [I; R1 = CH3, H, C6H5, CH3CH2, CH3(CH2)2; R2 = H, CH3, alkyl, aryl, electron pair; R1R2 = alkylene; R3 = H, 3-HO, 4-CH3O, 3,4-(CH3O)2, 4-CH3, 2-CH3, 4-Cl, 2-CH3OCO; R4 = H, CH3, C6H5, CH3CH2, CH3(CH2)2; X = N, NH; dotted bond = single, double] characterized by reacting an alkynol, HCCCHR1OH with an aromatic primary amine, R3C6H4NH2 in the presence of a ruthenium complex (Ru3(CO)12), more preferably with an acid or an ammonium salt (NH4·PF6). Thus, the title compound I (R1 = H; R2 = electron pair; R3 = H; R4 = (CH2)4CH3; X = NH; single bond at XCH; double at CH:CH) was prepared from CH3(CH2)4CHOHCCH and C6H5NH2 in the presence of Ru3(CO)12.

IC ICM C07D209-08

ICS C07D209-96

CC 27-11 (Heterocyclic Compounds (One Hetero Atom))

ST indole prepn catalysis ruthenium carbonyl complex catalyst

IT Catalysis

Catalysts

Regiochemistry

(processes for preparation of indole derivs.)

IT 15243-33-1, Triruthenium dodecacarbonyl

RL: CAT (Catalyst use); USES (Uses)

(processes for preparation of indole derivs.)

IT 62-53-3, Aniline, reactions 78-27-3, 1-Ethynyl-1-cyclohexanol 95-53-4,

2-Methylaniline, reactions 104-94-9, 4-Methoxyaniline 105-31-7,

1-Hexyn-3-ol 106-47-8, 4-Chloroaniline, reactions 106-49-0,

4-Methylaniline, reactions 134-20-3, 2-Methoxycarbonylaniline

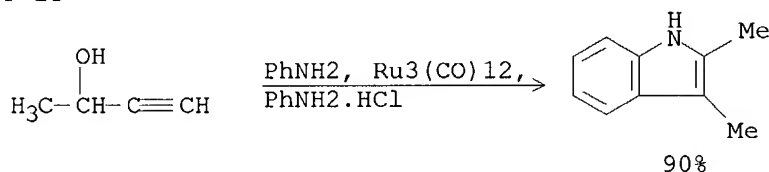
134-32-7, 1-Naphthylamine 142-04-1, Aniline hydrochloride 591-27-5,

3-Hydroxyaniline 818-72-4, 1-Octyn-3-ol 2028-63-9, 3-Butyn-2-ol

4187-86-4, 1-Pentyn-3-ol 4187-87-5 6315-89-5, 3,4-Dimethoxyaniline

RL: RCT (Reactant); RACT (Reactant or reagent)  
 (processes for preparation of indole derivs.)  
 IT 107-21-1, Ethylene glycol, reactions 16941-11-0, Ammonium  
 hexafluorophosphate  
 RL: RGT (Reagent); RACT (Reactant or reagent)  
 (processes for preparation of indole derivs.)  
 IT 91-55-4P, 2,3-Dimethylindole 828-94-4P 4757-69-1P 10257-92-8P  
 13141-50-9P 19013-49-1P 21296-93-5P 27505-78-8P 36729-21-2P  
 36729-23-4P 73177-34-1P 89188-94-3P 105908-32-5P 391611-81-7P  
 391611-82-8P  
 RL: SPN (Synthetic preparation); PREP (Preparation)  
 (processes for preparation of indole derivs.)

RX(1) OF 13



NOTE: 120.degree., 12 h, regioselective

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 3 OF 7 CASREACT COPYRIGHT 2004 ACS on STN  
 AN 135:166752 CASREACT  
 TI A practical one-pot synthesis of 2,3-disubstituted indoles from  
 unactivated anilines  
 AU Tokunaga, M.; Ota, M.; Haga, M.-a.; Wakatsuki, Y. *applicant*  
 CS PRESTO, Japan Science and Technology Corporation (JST), Saitama, 332-0012,  
 Japan  
 SO Tetrahedron Letters (2001), 42(23), 3865-3868 2  
 CODEN: TELEAY; ISSN: 0040-4039  
 PB Elsevier Science Ltd.  
 DT Journal  
 LA English  
 AB 2-Substituted 3-methylindoles are synthesized with good regioselectivity  
 from readily available substrates and catalysts, i.e., the reaction of  
 anilines with propargyl alcs. in the presence of 0.36-1 mol % Ru3(CO)12.  
 CC 27-11 (Heterocyclic Compounds (One Hetero Atom))  
 ST indole disubstituted deriv one pot prepn; aniline reaction propargyl alc  
 ruthenium carbonyl  
 IT Cyclization  
 (practical one-pot synthesis of 2,3-disubstituted indoles from  
 unactivated anilines)  
 IT Cyclization catalysts  
 (triruthenium dodecacarbonyl for practical one-pot synthesis of  
 2,3-disubstituted indoles from unactivated anilines)  
 IT 15243-33-1, Triruthenium dodecacarbonyl  
 RL: CAT (Catalyst use); USES (Uses)  
 (practical one-pot synthesis of 2,3-disubstituted indoles from  
 unactivated anilines)  
 IT 62-53-3, Aniline, reactions 95-53-4, o-Toluidine, reactions 104-94-9,

p-Anisidine 106-47-8, 4-Chloroaniline, reactions 106-49-0,  
 p-Toluidine, reactions 134-20-3, Methyl anthranilate 134-32-7,  
 1-Naphthylamine 142-04-1, Aniline hydrochloride 540-23-8, p-Toluidine  
 hydrochloride 818-72-4, 1-Octyn-3-ol 2028-63-9, 3-Butyn-2-ol  
 4187-86-4, 1-Pentyn-3-ol 4187-87-5 16941-11-0, Ammonium  
 hexafluorophosphate 20265-97-8, p-Anisidine hydrochloride 21436-98-6,  
 2,6-Dimethylaniline hydrochloride 353746-92-6 353746-93-7

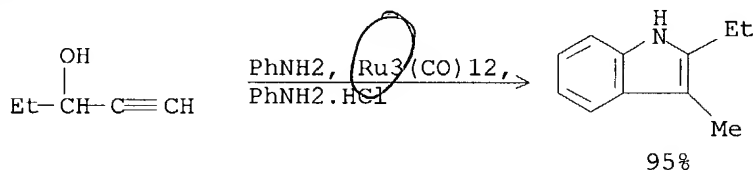
RL: RCT (Reactant); RACT (Reactant or reagent)  
 (practical one-pot synthesis of 2,3-disubstituted indoles from  
 unactivated anilines)

IT 91-55-4P, 2,3-Dimethylindole 828-94-4P 10257-92-8P 19013-49-1P,  
 2-Ethyl-3-methylindole 21296-93-5P 27505-78-8P 36729-21-2P  
 73177-34-1P 89188-94-3P 105908-32-5P

RL: SPN (Synthetic preparation); PREP (Preparation)  
 (practical one-pot synthesis of 2,3-disubstituted indoles from  
 unactivated anilines)

\*

RX(1) OF 10



NOTE: regioselective, no solvent, reaction run in open air,  
 optimization study, optimized on catalyst

RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 4 OF 7 CASREACT COPYRIGHT 2004 ACS on STN  
 AN 130:153230 CASREACT  
 TI Synthesis of 2-dienylindole, SB 242784, by a three-component  
 palladium-catalyzed coupling reaction  
 AU Yu, Marvin S.; Lopez De Leon, Lewilynn; McGuire, Michael A.; Botha, Glen  
 CS SmithKline Beecham Pharmaceuticals, King of Prussia, PA, 19403, USA  
 SO Tetrahedron Letters (1998), 39(51), 9347-9350  
 CODEN: TELEAY; ISSN: 0040-4039  
 PB Elsevier Science Ltd.  
 DT Journal  
 LA English  
 AB The synthesis of SB 242784 using a novel one-pot Castro-Stephens-Suzuki  
 reaction as the key reaction is described.  
 CC 21-2 (General Organic Chemistry)  
 Section cross-reference(s): 27  
 ST SB 242784 prepn Castro Stephens Suzuki; pentadienamide  
 chloroindolylmethoxy pentamethylpiperidinyl prepn SB 242784  
 IT Coupling reaction  
 (Castro-Stephens-Suzuki; preparation of SB 242784 by three-component  
 palladium-catalyzed coupling reaction)  
 IT Suzuki coupling reaction  
 (preparation of SB 242784 by three-component palladium-catalyzed coupling  
 reaction)  
 IT Alkynes



RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of enynes by three-component palladium-catalyzed coupling reaction)

IT 220185-65-9P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)

IT 52670-38-9, 2-Ethynylaniline  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of (alkenyl)indoles by three-component palladium-catalyzed coupling reaction)

IT 124643-50-1P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation of (alkenyl)indoles by three-component palladium-catalyzed coupling reaction)

IT 29475-88-5P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of (alkenyl)indoles by three-component palladium-catalyzed coupling reaction)

IT 13965-03-2, Dichlorobis(triphenylphosphine)palladium  
RL: CAT (Catalyst use); USES (Uses)  
(preparation of SB 242784 by three-component palladium-catalyzed coupling reaction)

IT 74-86-2, Acetylene, reactions 95-76-1, 3,4-Dichloroaniline 115-19-5, 2-Methyl-3-butyne-2-ol 40327-96-6 81371-76-8, Methyl 3-bromo-2,2-dimethoxypropanoate  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of SB 242784 by three-component palladium-catalyzed coupling reaction)

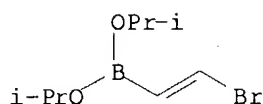
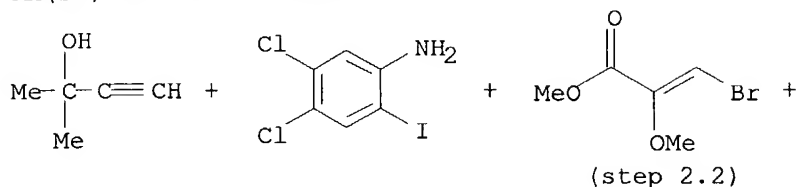
IT 119441-89-3P 180867-78-1P 220185-63-7P 220185-64-8P 220185-66-0P 220185-67-1P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation of SB 242784 by three-component palladium-catalyzed coupling reaction)

IT 201929-00-2P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of SB 242784 by three-component palladium-catalyzed coupling reaction)

IT 764-93-2, 1-Decyne  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(preparation of enynes by three-component palladium-catalyzed coupling reaction)

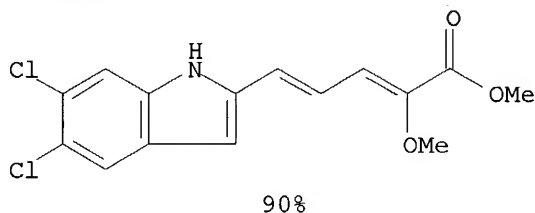
IT 220185-68-2P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of enynes by three-component palladium-catalyzed coupling reaction)

RX(25) OF 38 - 3 STEPS



- 1.1.  $\text{PdCl}_2(\text{PPh}_3)_2$ ,  
CuI, Et<sub>3</sub>N
- 1.2. NaOBu-t, t-BuOH
- 2.1.  $\text{PdCl}_2(\text{PPh}_3)_2$ ,  
CuI, Et<sub>3</sub>N, THF
- 2.2. CsF, Water,  
Me<sub>2</sub>CO
3.  $\text{PdCl}_2(\text{MeCN})_2$ , DMF

RX(25) OF 38 - 3 STEPS



NOTE: 2) stereoselective

RE.CNT 21 THERE ARE 21 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L18 ANSWER 5 OF 7 CASREACT COPYRIGHT 2004 ACS on STN  
AN 130:13931 CASREACT  
TI Synthesis of  $\alpha$ -carbolines and  $\beta$ -carbolinones via intramolecular  
Diels-Alder reactions of 2(1H)-pyrazinones  
AU Tahri, Abdellah; Buysens, Kris J.; Van Der Eycken, Erik V.; Vandenberghe,  
Didier M.; Hoornaert, Georges J.  
CS Laboratorium voor Organische Synthese Department of Chemistry, K.U. Leuven  
Celestijnenlaan, Louvain, B-3001, Belg.  
SO Tetrahedron (1998), 54(43), 13211-13226  
CODEN: TETRAB; ISSN: 0040-4020  
PB Elsevier Science Ltd.  
DT Journal  
LA English  
AB 2(1H)-Pyrazinones bearing a 2-XC<sub>6</sub>H<sub>4</sub>C.tplbond.CR moiety (X = NH, NAc) are  
shown to undergo an intramol. cycloaddn.-elimination reaction on  
thermolysis in refluxing bromobenzene yielding  $\alpha$ -carbolines or  
 $\beta$ -carbolinones. The product distribution depends strongly on the  
substitution pattern of the pyrazinone precursors and the solvent used for  
thermolysis. A high yield and selective formation of  $\beta$ -carbolinones  
is possible when heating in tetrahydronaphthalene at reflux. Use of  
acetic anhydride as solvent facilitated the reaction and made it possible

to realize a carbolin(on)e inaccessible by thermolysis in the previously mentioned solvents.

CC 28-2 (Heterocyclic Compounds (More Than One Hetero Atom))

ST carboline prepn; carbolinone prepn; Diels Alder intramol pyrazinone ethynylanilino deriv

IT Diels-Alder reaction  
(intramol.;  $\alpha$ -carbolines and  $\beta$ -carbolinones via intramol. Diels-Alder reactions of 2(1H)-pyrazinones)

IT Elimination reaction  
( $\alpha$ -carbolines and  $\beta$ -carbolinones via intramol. Diels-Alder/elimination reactions of 2(1H)-pyrazinones)

IT 107-19-7, Propargyl alcohol 536-74-3, Phenylacetylene 615-43-0, 2-Iodoaniline 1066-54-2, Ethynyltrimethylsilane 87486-35-9 87486-37-1 138610-71-6 173200-35-6 173200-36-7 216105-10-1 216105-11-2 216105-12-3

RL: RCT (Reactant); RACT (Reactant or reagent)  
( $\alpha$ -carbolines and  $\beta$ -carbolinones via intramol. Diels-Alder reactions of 2(1H)-pyrazinones)

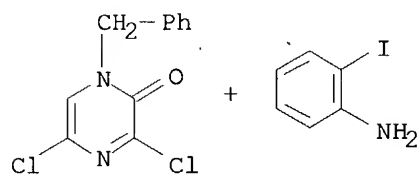
IT 162272-99-3P 216104-70-0P 216104-72-2P 216104-74-4P 216104-75-5P  
216104-76-6P 216104-77-7P 216104-78-8P 216104-79-9P 216104-80-2P  
216104-81-3P 216104-82-4P 216104-83-5P 216104-84-6P 216104-85-7P  
216104-86-8P 216104-87-9P 216104-88-0P 216104-89-1P 216105-03-2P  
216105-05-4P 216105-06-5P 216105-07-6P 216105-09-8P 216105-16-7P  
216105-17-8P

RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
( $\alpha$ -carbolines and  $\beta$ -carbolinones via intramol. Diels-Alder reactions of 2(1H)-pyrazinones)

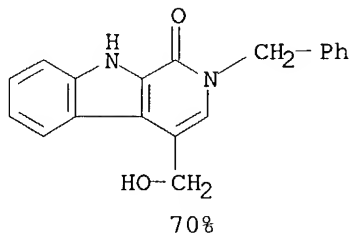
IT 19839-52-2P 216104-90-4P 216104-91-5P 216104-92-6P 216104-93-7P  
216104-94-8P 216104-95-9P 216104-96-0P 216104-97-1P 216104-98-2P  
216104-99-3P 216105-00-9P 216105-01-0P 216105-02-1P 216105-04-3P  
216105-08-7P 216105-13-4P 216105-14-5P 216105-15-6P 216105-18-9P

RL: SPN (Synthetic preparation); PREP (Preparation)  
( $\alpha$ -carbolines and  $\beta$ -carbolinones via intramol. Diels-Alder reactions of 2(1H)-pyrazinones)

## RX(117) OF 126 - 4 STEPS

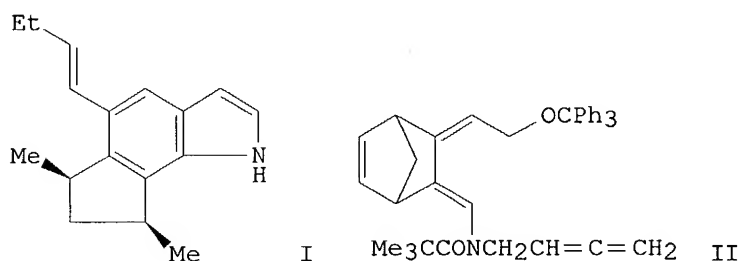


1.1. NaH, THF  
1.3. Water  
1.4. CH<sub>2</sub>Cl<sub>2</sub>  
2. Propargyl alcohol,  
PdCl<sub>2</sub>(PPh<sub>3</sub>)<sub>2</sub>, CuI,  
Et<sub>2</sub>NH  
3. Ac<sub>2</sub>O  
4.1. KOH, MeOH  
4.2. HCl



RE.CNT 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD  
ALL CITATIONS AVAILABLE IN THE RE FORMAT

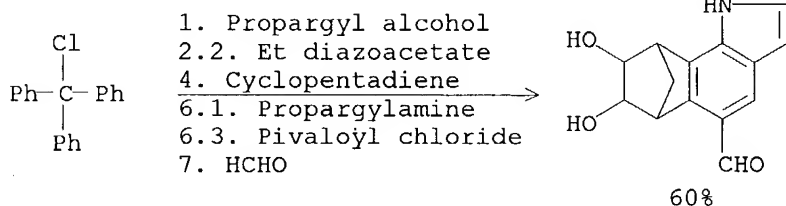
L18 ANSWER 6 OF 7 CASREACT COPYRIGHT 2004 ACS on STN  
AN 113:6652 CASREACT  
TI The total synthesis of (+)-cis-trikentrin B via allene intramolecular  
cycloaddition  
AU Yasukouchi, Takanori; Kanematsu, Ken  
CS Fac. Pharm. Sci., Kyushu Univ., Fukuoka, 812, Japan  
SO Tetrahedron Letters (1989), 30(47), 6559-62  
CODEN: TELEAY; ISSN: 0040-4039  
DT Journal  
LA English  
GI



AB The first total synthesis of (+)-cis-trikentrin B (I) based on a new  
indole synthesis via the intramol. Diels-Alder reaction of  
1,2,3-trisubstituted allenic dienamide II is described.  
CC 31-3 (Alkaloids)  
ST trikentrin B total synthesis; allenic dienamide intramol Diels Alder  
IT Diels-Alder reaction  
(intramol., of allenic dienamide, in total synthesis of trikentrin B)  
IT 542-92-7, 1,3-Cyclopentadiene, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(Diels-Alder reaction of, with allenic ester)  
IT 16666-78-7  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(Wittig reaction of, with tetracyclic carboxaldehyde)  
IT 2450-71-7, Propargylamine  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(condensation of, with bicycloheptenecarboxaldehyde derivative)  
IT 127477-96-7P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and Diels-Alder reaction of, with cyclopentadiene)  
IT 127478-04-0P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and Wittig reaction of, with propylidene triphenylphosphorane)  
IT 127477-99-0P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and condensation of, with formaldehyde)  
IT 127477-98-9P  
RL: SPN (Synthetic preparation); PREP (Preparation)

- (preparation and condensation of, with propargylamine)
- IT 127478-01-7P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and dehydrogenation of)
- IT 127478-02-8P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and detritylation of)
- IT 127477-95-6P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and isomerization of)
- IT 127478-05-1P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and oxidative cleavage of)
- IT 127478-03-9P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and oxidation of)
- IT 82816-38-4P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and reaction of, with Et diazoacetate)
- IT 127478-06-2P 127515-91-7P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and reduction of)
- IT 127478-00-6P 127592-48-7P, (±)-(Z)-cis-Trikentrin B  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)
- IT 127477-97-8P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation, reduction, and oxidation of)
- IT 127515-90-6P, (±)-Trikentrin B  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(total synthesis of)
- IT 107-19-7, 2-Propyn-1-ol  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(tritylation of)

RX(90) OF 105 - 11 STEPS



NOTE: 6) Mol. sieves 1st step

L18 ANSWER 7 OF 7 CASREACT COPYRIGHT 2004 ACS on STN  
AN 112:217478 CASREACT  
TI Synthesis of indoles and L-tryptophans specifically deuterium or carbon-13-labeled in the six-membered ring  
AU Van den Berg, Ellen M. M.; Van Liemt, Willem B. S.; Heemskerk, Bram; Lugtenburg, Johan  
CS Gorlaeus Lab., Univ. Leiden, Leiden, 2300 RA, Neth.  
SO Recueil des Travaux Chimiques des Pays-Bas (1989), 108(9), 304-13  
CODEN: RTCPA3; ISSN: 0165-0513  
DT Journal  
LA English  
AB (4-2H)-, (5-2H)-, (6-2H)-, (7-2H), (4-13C)- and (5-13C)-1H-indole and the corresponding six L-tryptophans were prepared from simple labeled starting materials via a single reaction scheme. The L-tryptophans were prepared from the indoles via a quant. one-step biosynthetic conversion. A scheme leading to the preparation of three other indoles, mono-13C-enriched in the 6-membered ring, has been developed and optimized. Indole and L-tryptophan, 13C- or 2H-enriched at positions 4 or 5, were prepared with 99% isotope incorporation without scrambling. (6-2H)-1H-indole and -tryptophan were prepared with 95% D incorporation, and (7-2H)-1H-indole and -tryptophan with 96%. The reactions have been carried out on a gram scale and, in the case of the 4-13C system, they have been scaled up to the 10 g level with no deterioration in yield.  
CC 34-2 (Amino Acids, Peptides, and Proteins)  
Section cross-reference(s): 27  
ST carbon 13 labeled indole tryptophan; deuterium labeled indole tryptophan  
IT 107-19-7, Propargyl alcohol  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(addition reaction of, with dihydropyran)  
IT 2450-71-7, Propargyl amine  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(condensation reactions of, with labeled and unlabeled crotonaldehyde)  
IT 56-45-1, Serine, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(enzymic reaction of, with labeled and unlabeled indoles, tryptophans from)  
IT 75-07-0, Acetaldehyde, reactions  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(olefination of, with triethylphosphonoacetate)  
IT 78633-30-4P 127136-18-9P 127136-19-0P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and acidic hydrolysis of)  
IT 6089-04-9P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)  
(preparation and addition reaction of, with tributyltin hydride)  
IT 127135-91-5P 127135-92-6P 127135-93-7P 127774-47-4P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and condensation of, with formaldehyde, allene derivative from)  
IT 127135-90-4P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and condensation of, with labeled and unlabeled formaldehyde, allene derivs. from)  
IT 123-73-9P 84041-41-8P 127136-15-6P 127136-16-7P 127136-17-8P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and condensation of, with propargylamine)  
IT 120-72-9P, 1H-Indole, reactions 52199-98-1P, 1H-Indole-5-d

107266-42-2P, 1H-Indole-6-d 127136-06-5P, 1H-Indole-4-d 127136-07-6P,  
1H-Indole-7-d 127136-08-7P, 1H-Indole-4-13C 127136-09-8P,  
1H-Indole-5-13C  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and enzymic reaction of, with serine, tryptophan from)

IT 764-01-2P, 2-Butyn-1-ol  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and hydride or deuteride reduction of)

IT 623-70-1P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and hydride reduction of)

IT 867-13-0P, Triethylphosphonoacetate  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and olefination by, of acetaldehyde)

IT 504-61-0P 73156-71-5P 119711-86-3P 127136-20-3P 127136-21-4P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and oxidation of, with manganese dioxide, crotonaldehyde from)

IT 13307-67-0P, 1-Carboethoxyindole 127136-00-9P 127136-01-0P  
127136-02-1P 127136-03-2P 127136-04-3P 127136-05-4P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and saponification of)

IT 55723-10-9P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and sequential lithium-tin exchange and reaction of, with  
labeled and unlabeled iodomethane)

IT 104837-80-1P 127135-94-8P 127135-95-9P 127135-96-0P 127135-97-1P  
127135-98-2P 127135-99-3P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation and sequential thermal cyclization and aromatization of)

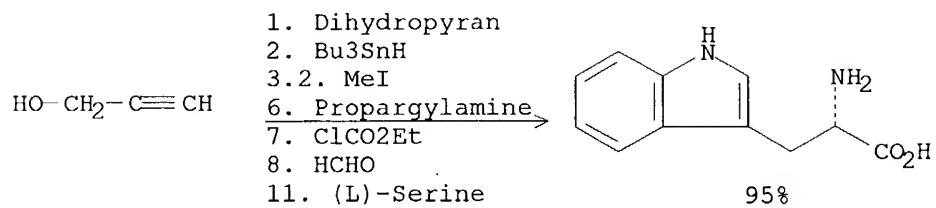
IT 127136-10-1P 127136-11-2P 127136-12-3P 127136-13-4P 127136-14-5P  
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT  
(Reactant or reagent)  
(preparation and N-acylation of, with Et chloroformate)

IT 87830-21-5P  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of)

IT 73-22-3P, Tryptophan, preparation 90697-20-4P, L-Tryptophan-4-d  
105201-56-7P, L-Tryptophan-7-d 127136-22-5P, L-Tryptophan-5-d  
127136-23-6P, L-Tryptophan-6-d 127136-24-7P, L-Tryptophan-4-13C  
127136-25-8P, L-Tryptophan-5-13C  
RL: SPN (Synthetic preparation); PREP (Preparation)  
(preparation of, by enzymic reaction of indole with serine)

IT 105-36-2, Ethyl bromoacetate  
RL: RCT (Reactant); RACT (Reactant or reagent)  
(reaction of, with tri-Et phosphite)

RX(379) OF 408 - 11 STEPS



NOTE: 2) 72% overall, 6) mol. sieves agent, 11) enzymic; microbial;  
buffered soln.

=&gt;